BTEC Assignment Brief

Qualification	Pearson BTEC International Level 3 Diploma in Construction and the Built Environment Pearson BTEC International Level 3 Extended Diploma in Construction and the Built Environment Pearson BTEC International Level 3 Diploma in Civil Engineering Pearson BTEC International Level 3 Extended Diploma in Civil Engineering Pearson BTEC International Level 3 Diploma in Building Services Engineering Pearson BTEC International Level 3 Extended Diploma in Building Services Engineering
Unit number and title	Unit 17: Further Mathematics in Construction
Learning aim(s) (For NQF only)	C: Investigate the use of statistical methods to solve a construction problem
Assignment title	Investigating the use of statistical methods to solve construction problems
Assessor	
Issue date	
Hand in deadline	
Vocational Scenario or Context	You are working as a trainee civil engineer within a medium sized civil engineering consultancy company. As part of your work you have been asked to analyse some data about a project your company is involved with, and then present the results of your analysis using suitable methods.
Task 1	You are to produce a report that includes appropriate graphs and charts to represent statistical data for a given construction activity. **To do this:** You have been provided with two sets of data, one for concrete cube testing and the other for climatic information. You need to present the data using a range of charts and graphs before identifying statistically important variables and evaluating the data. First, using the concrete cube test results, you need to:

	• Arrange the data into equal classes • Determine the frequency distribution • Draw the frequency histogram • Create a cumulative frequency table for the data • Draw the cumulative frequency graph • Use your cumulative frequency graph to determine if the data is normally distributed or not? • Calculate: i) the mean and standard deviation; ii) the upper and lower quartile values; and iii) the inter-quartile range for the given data. • Calculate: i) the mode; and ii) median for the given data. Use the table of measurements of rainfall that you have been supplied with to complete the following activities: • Draw a bar or pie chart to present the data. • Calculate: i) the mean and standard deviation; ii) the upper and lower quartile values; and iii) the inter-quartile range for the given data. • Calculate: i) the mode; and ii) median for the given data. Compare the given mean rainfall value with the value that you have determined from your data. You should compare your results against provided historical data for the same types of data. You should include reference to confidence limits.
Checklist of evidence required	A report containing the results of your statistical analysis. This should include table, charts and graphs supported by calculations. You should show all of your working, and make sure that your calculations are clear, giving you answers to an appropriate degree of accuracy, in standard form if necessary, and use the correct units where appropriate.

Criteria covered by this task:	
Unit/Criteria reference	To achieve the criteria you must show that you are able to:
17/C.D3	Demonstrate, using complex statistical analysis and assessment techniques, the outcome of a given construction problem.
17/C.M4	Demonstrate, using advanced statistical analysis and assessment techniques, the outcome of a given construction problem.
17/C.P5	Demonstrate simple techniques to present grouped and ungrouped statistical data related to a given construction problem.
17/C.P6	Demonstrate, using simple statistical analysis methods, the outcome of

	a given construction problem.
Sources of information to support you with this Assignment	Textbook: Construction & The Built Environment Level 3; S Topliss, M Hurst; Pearson publications; ISBN 08456304444 Weblinks: http://www.mathsisfun.com/index.htm http://www.mathcentre.ac.uk/students/topics **Above are some examples of websites. Further useful resources may be found at** qualifications.pearson.com/en/support/published-resources.html
Other assessment materials attached to this Assignment Brief	Concrete cube test results Climatic data Historic Data

Additional assessment materials:

Compressive Strength of Concrete Cubes (N/mm^2) after 28 days

Nominal Strength M25

24	22	26	22	25	25	26	23	28	26
25	25	26	24	28	24	25	24	25	25
24	26	24	25	26	23	26	25	22	25
23	25	24	26	23	25	24	24	25	24
26	24	25	25	21	24	25	26	22	26

Historic Data: Mean 25.2, Standard Deviation 4.

Monthly Rainfall Statistics (mm)

monthly rainfall (mm)	number of months
0 to 30	16
31 to 60	24
61 to 90	12
91 to 120	5
121 to 150	3

Historic monthly mean rainfall

1971 - 2000 = 57.62 mm

1981 - 2010 = 54.99 mm